Health factors and early retirement among older workers

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In the late 1990s, the proportion of recent retirees younger than age 60 was 14 percentage points higher than in the late 1980s (Kieran 2001) and retirement patterns have changed little in the past decade (Table 1).[1] A high rate of early retirement presents a range of challenges to public policy makers and individuals. With an aging population, early retirement may be associated with labour shortages in particular industries, occupations or geographic areas. Early retirement can also exacerbate issues related to the effective dependency ratio—the number of non-workers for every worker in a society. Early retirement may put additional pressure on publicly financed programs including health care and pay-as-you-go transfers like Old Age Security and the Guaranteed Income Supplement.

What influences people to retire early? Retirement decisions are based on many factors. The literature indicates that financial considerations are the most important determinant of retirement; that is, people retire because they are financially able to do so (Novak and Campbell 2006). As confirmed by the 2007 General Social Survey, employer-provided pension plans and individual retirement savings are the financial keystones of retirement planning.[2]

Table 1 Average age of retirement

	Both sexes	Men	Women
		age	
1976	65	65	64
1981	65	65	64
1986	64	64	63
1991	63	63	62
1996	62	62	61
2001	62	62	60
2006	62	62	61
2009	62	62	62

Source: Statistics Canada, Labour Force Survey.

Besides financial capability, one's own health or the need to provide care to a family member can also be important reasons for retirement (Statistics Canada 2002). In terms of unplanned or involuntary retirement, individual workers' own health is the most important reason. In 2002, almost 30% of those who retired between age 50 and 59 indicated their health as the reason. A recent European study also found that early retirement was associated with health factors such as poor working conditions, self-perceived health, major depression, quality of life, and the number of physical symptoms (Siegrist et al. 2006). Due to health problems, many have to retire even if they are not financially ready.

Given that the health and well-being status of older workers has a major influence on the probability of remaining employed, the identification of specific health-related factors that lead to their early retirement may help frame preventive measures. A better understanding of the factors that lead to early, health-related retirement may help shape employer practices, public health policies and treatment protocols that enable workers to exercise greater control over the timing of their retirement.

Most studies on health-related retirement have focused on a limited number of health indicators like self-perceived general health obtained from cross-sectional surveys. Little is known about longitudinal effects of both subjective and objective health factors on retirement behaviour. Moreover, very few studies, especially in the Canadian context, have addressed the impact of risk factors such as health behaviours and quality of working conditions on retirement, although the effects of such factors on physical and psychological health are widely recognized.

Using 12 years of data from the National Population Health Survey (NPHS), this study examines longitudinal effects of health conditions,

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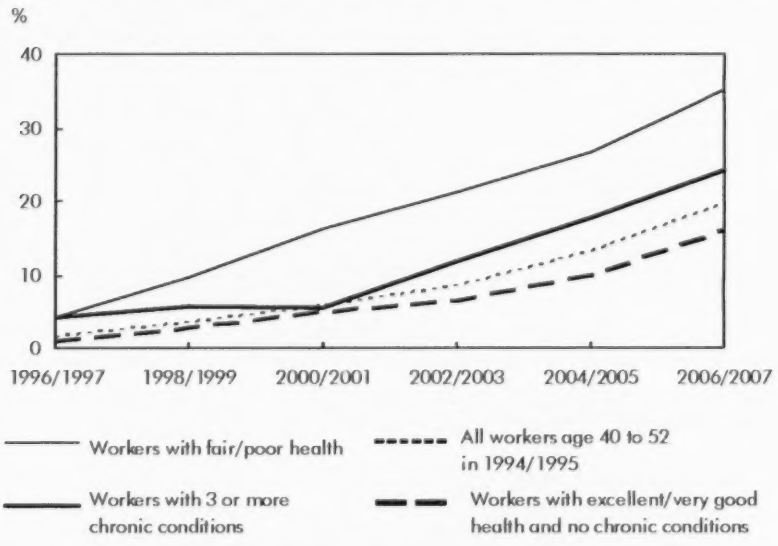
health behaviours, and workplace stress on early exits from the labour market. Two types of exit from the labour market are included in the analysis: exits due to retirement and exits due to disability or health issues. The analysis is designed to measure departures from the labour market due to both regular retirement and involuntary health-related retirement. In reality, the two types of exits are interconnected. For some older workers, becoming inactive in the labour market due to disability may lead to a permanent exit. In other words, illness and disability are important precursors of retirement (Kinsella and Gist 1995). Even when some respondents report retirement as their reason for exiting, health factors may play an important part in the decision. By combining exits due to retirement and disability together, both regular and health-related aspects of the exits from the labour force can be analyzed.

The study population includes full-time workers who were age 40 to 52 in 1994/1995 and had valid re-interviews every two years until 2006/2007. The NPHS provides detailed health-related information for a large number of respondents, which includes both subjective and objective measures of disability and health status (see *Data source and definitions*). Although the NPHS does not contain detailed questions on income- and labour force-related subject matters,[3] the survey provides basic information on labour force status. Since the NPHS is a monitoring tool for the general population, the sample of individuals passing through the early retirement window is also relatively small. Given the limitations of health-related information in most labour and income surveys, however, the NPHS may be the best data source for studies delving into the relationship between health and retirement in the Canadian context (cf. Campolieti 2002).

Health and exits from the labour force

By 2006/2007, one in five full-time workers who were age 40 to 52 in 1994/1995 had exited the labour force (Chart A). The reasons for exit can range from retirement[4] or disability to personal or family responsibilities. The biennial exit rate was steeper during the latter part of the 12-year study period as workers aged and approached the end of their careers.[5] However, the age curve is more pronounced among workers with health problems as a higher proportion of them exited employment each survey year, compared with healthier workers. The percentage differences for being out of the labour force between healthy and less healthy workers also grew over time. Clearly, individuals with health problems were most likely to stop working early. Although everyone in the sample was working full time at the start of the study period, within 12 years 35% of workers who negatively perceived their health had stopped working, as had 24% of those diagnosed with 3 or more chronic conditions. Similarly, the labour force exit rate was consistently lower for healthy workers without chronic conditions each survey year and, after 12 years, only a total of 16% were without a job.

Chart A Workers with health problems more likely to exit labour market early



Source: Statistics Canada, National Population Health Survey.

Health status is also a related reason for exit from the labour market. In 2006/2007, almost one-half of workers with poor health who

stopped working indicated the main reason was illness or disability. Among those in good health, almost 80% reported retirement as the main reason for leaving the labour market and less than 10% cited illness or disability (Chart B). Compared with healthy individuals, a smaller portion of those with health problems withdrew from the labour force due to other reasons such as caring for family members, personal responsibilities, education leave, paid leave, layoff, looking for work, and pregnancy.

Modeling early exits from the labour market

On the surface, health problems seem clearly linked with early exits from the labour force. But both health status and labour market exits may correlate with other sociodemographic variables. For example, those who were older at the start of the study may be more prone to chronic conditions compared with those who were younger. Multivariate modeling can be used to assess the relationship between health status and retirement while controlling for such factors. Control variables in the model are age, place of residence, province, family characteristics, immigration status, household income adequacy, class of employment, highest level of schooling, and occupation.

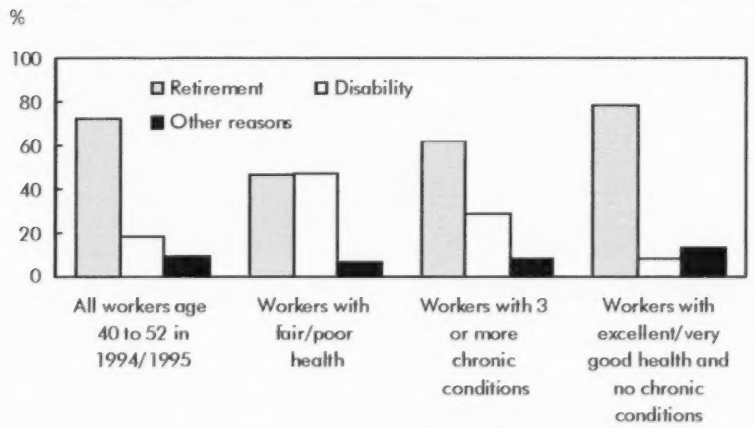
A survival model is employed to examine longitudinal associations between health factors and retirement (see *Data source and definitions*). The model estimates adjusted proportional hazard ratios for retirement between 1996/1997 and 2006/2007 while controlling for sociodemographic factors. Hazard ratios are used to estimate relative risks of the probability of the event occurring in a specific group versus those not in that group. The survival model in this analysis estimates risk ratios for early retirement. This model is constructed to include both regular and health-related exits from the labour market. Older workers who leave the labour market because of illness or disability are treated as retirees based on the assumption that they have departed permanently (Hayward et al. 1998). Serious illnesses or disabilities, particularly among those nearing the end of their careers, are likely to lead to a permanent exit from the labour market. Cases of not working due to other reasons were censored (see *Data source and definitions* for more details).

Health status and early retirement

To measure the effects of health status, indicators of both subjective and objective health were examined. The analysis includes information based on a five-category scale of self-perceived health and the number of chronic conditions. The number of chronic conditions[6] was included to capture the effect of objective health status and minimize potential biases of self-assessment of health. Subjective health measures may be affected by a social desirability bias[7]—retirees may be claiming poor health in order to justify reduced labour force involvement (Bazzoli 1985). People who enjoy their work are likely to downplay their health problems and work longer, while those who dislike their work may exaggerate health problems and retire sooner (Dwyer and Mitchell 1999).

The effects of individual health status on early retirement were found to be statistically significant. The self-perceived health of men was related to their likelihood of departing from the workforce early. Compared with individuals who perceived their health as excellent,

Chart B Higher proportion of workers with health problems exit labour market due to disability



Source: Statistics Canada, National Population Health Survey, 2006/2007.

Data source and definitions

The **National Population Health Survey** (NPHS) collects health information from private households and institutional residents in the 10 provinces, except from residents living on Indian reserves and Armed Forces bases, and in some remote areas.

For each of the first three cycles (1994/1995, 1996/1997 and 1998/1999), two cross-sectional files were produced: general and health. The general file has sociodemographic and some health information for each household member. The health file contains additional, in-depth information on one randomly selected household member. Starting in 2000/2001, the NPHS became strictly longitudinal, and the two questionnaires were combined.

In addition to the cross-sectional information, a longitudinal file was produced at baseline (1994/1995). In 1994/1995, a member from each participating household was randomly selected and the resulting panel of 17,276 was followed over time. Response rates were 92.8% in 1996/1997, 88.3% in 1998/1999, 84.9% in 2000/2001, 80.8% in 2002/2003, 77.6% in 2004/2005 and 77.0% in 2006/2007.

In this analysis, all seven cycles of the NPHS were used. Those age 40 to 52 who indicated their pattern of working hours in the past 12 months as one full-time job, only full-time at all jobs, or some full-time and some part-time at baseline (n=1,339) were selected for analysis. Only individuals completing all seven cycles and who either stayed in the workforce or retired (or became disabled) in subsequent cycles were selected. Excluded from the model are all individual time units in which events other than the one of interest occurred (the competing risks approach) to focus entirely on the event of interest. For instance, cases of exits due to other reasons were dropped from the model.

A survival analysis model is employed to provide adjusted proportional hazard ratios of retirement between 1996/1997 and 2006/2007 while controlling for various sociodemographic confounders such as age, place of residence, immigration status, family characteristics, income adequacy, educational attainment, class of employment (self-employed/employee), and occupation. The proportional hazards model allows timing of events and their association with various characteristics to be studied. For example, if a respondent reported that she was not working because of her retirement or disability after 1994/1995, this was considered an event. With this method, each individual's event history is broken down into a set of discrete time units (i.e., NPHS cycles) that are treated as distinct observations. After pooling these observations, the next step is to estimate a binary regression model predicting whether an event did or did not occur in each time unit (Allison 1995). Many covariates in this analysis are not constant through the whole study period. For example, self-perceived health may change over time and the risk of retirement in 2006/2007 was related to health status in 2004/2005 rather than the baseline. Thus, those time-varying factors in the model were allowed to change over the period. Time-dependent covariates included in the model were self-perceived health status, chronic conditions, presence of children under 13 (yes/no), marital status (married/not married), place of residence, income adequacy, class of employment, occupation and province, and work stress indicators. On the other hand, only values at baseline were used for age, sex, place of birth, and education. As well, time elapsed since the first cycle (in terms of number of cycles) was included as a continuous variable to correct for the greater chance of retirement with the passing of time. For each person–year, that variable ranged from 1 to 6.

To account for the survey design effects of the NPHS, coefficients of variation and p-values were estimated and significance tests were performed using the bootstrap technique. The significance level was set at $p < 0.05$.

Early retirement comprises the retirement of full-time workers age 40 to 52 in 1994/1995 over the 12-year period that followed. Possible retirement ages of the study population range from 42 to 64. If respondents indicated that they were not currently working and specified their main reason for not working for pay or profit was retirement, or own health or disability, they were considered to have taken early retirement.

To measure **work stress**, the NPHS employed an abbreviated version of Karasek's Job Content Questionnaire (JCQ) (Karasek 1979). The NPHS measured the work stress of respondents who worked at a job or business in the preceding 12 months. Twelve items in the JCQ (for detail measurements, see Park 2007) were used to measure job control, psychological demands, job insecurity, physical exertion and social support at the workplace. The job–strain ratio was calculated by dividing the adjusted score for psychological demands by that of job control. A small constant (0.1) was added to the numerator and denominator to avoid division by 0. To deal with outliers, scores greater than 3 were set to 3. Respondents were classified as being in **high job strain** if the ratio was 1.20 or higher; **medium job strain** if the ratio was between 0.81 and 1.19; and **low job strain** if the ratio was 0.80 or lower.

Respondents who answered "strongly disagree" or "disagree" to the statement, "your job security is good" were classified as having **job insecurity**.

Respondents who answered "strongly agree" or "agree" to the statement, "your job requires a lot of physical effort" were classified as having **physical exertion**.

Respondents were classified as having **low co-worker support** at the workplace if they either agreed or strongly agreed with being exposed to hostility or conflict from the people at work or disagreed or strongly disagreed with co-workers being helpful in getting the job done. Respondents were regarded as having **low supervisor support** if they disagreed or strongly disagreed with supervisors being helpful in getting the job done.

Additionally, respondents were asked if they were "very satisfied," "somewhat satisfied," "not too satisfied" or "not at all satisfied" with their jobs. Those who answered "not too satisfied" or "not at all satisfied" were classified as having **job dissatisfaction**.

Heavy drinking was measured by asking respondents the number of times in the past year they had had 5 or more alcoholic drinks on one occasion. Having done so at least once per month (or 12 or more times in the past year for cycle 1) was classified as heavy monthly drinking.

Daily smokers were defined as those who smoked cigarettes every day.

Body mass index (BMI) is calculated by dividing weight in kilograms by height in metres squared. **Obesity** (a BMI of 30 or more) for people age 18 or older was identified.

Physical inactivity was based on total accumulated energy expenditure (EE) during leisure time. EE was calculated from the reported frequency and duration of all of a respondent's leisure-time physical activities in the three months before the interview and the metabolic energy demand (MET value) of each activity, which was independently established. An EE of 3 or more K/K/D (kilocalories per kilogram of body weight per day) was defined as high, 1.5 to 2.9 was moderate, and less than 1.5 was low. Respondents with high or moderate EE were considered **physically active**, while those with low EE were considered **inactive** (for more details, see Statistics Canada 1995 and Stephens et al. 1986).

men with negative self-perceived health (poor or fair) were almost five times more likely to stop working (Table 2). Although the propensity for female workers with less positive subjective health to exit the labour market was estimated to be greater than for women with excellent health, this result fell just above our significance threshold (p=0.07 versus a threshold of 0.05). The number of chronic conditions was also associated with an early exit for men: for each additional chronic condition, there was a 25% increase in the risk of early departure. Eye problems, back pain, ulcers, and migraines were particularly likely to increase the relative risk of early retirement (data not shown). These findings of health effects on workers' retirement behaviour are consistent with previous research. For instance, Dwyer and Mitchell (1999) suggested that men in poor overall health in the United States were expected to retire one to two years earlier.

Table 2 Adjusted[1] health status risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Self-perceived health			
Excellent (ref.)	1.00	1.00	1.00
Very good	1.18	1.37	1.03
Good	1.60*	1.59	1.65
Fair or poor	3.46*	4.72*	1.54
Number of chronic conditions	1.17*	1.25*	1.05

* significantly different from reference group (ref.) at the 0.05 level
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

Additional analysis on labour market exits due to retirement only found that neither self-perceived health status nor the number of chronic conditions significantly affected the risk of early exit from the labour market. Previous research suggests that health status may not be as important to voluntary retirement as to involuntary retirement (Lachance and Seligman 2009, and Szinovacz and Davey 2005). The results of this study are consistent with that interpretation.

Health behaviour and early retirement

It is well-known that problem drinking is associated with a greater prevalence and incidence of limitations in home and work tasks in a near-elderly population (Ostermann and Sloan 2001, and Mullahy and Sindelar 1996). Alcohol consumption has been associated with many types of physical, psychological and cognitive impairments. Heavy drinking increases accidents and injuries, and may lead to liver and heart damage. The consequences of excessive alcohol consumption could reduce a worker's labour market productivity and reliability (Mullahy and Sindelar 1996). In this analysis, the effect of heavy drinking on labour force exits was significant for men (Table 3). Compared with other workers, heavy drinkers (those who consume five or more alcoholic drinks on one occasion at least once per month) were almost twice as likely to exit the labour force early.

Obesity can affect employment decisions directly by creating functional disabilities or indirectly by aggravating or actually causing other health ailments, which can in turn affect employment status (Renna and Thakur 2006, and Houston et al. 2009). Although the general health effect of obesity may apply to all age groups, obesity among older workers, in particular, plays an important role as a catalyst in their labour market exit decisions. Obesity among older women was related to earlier retirement compared with workers without this condition. Obese workers were 1.6 times more likely than the non-obese to retire early.

Table 3 Adjusted[1] health behaviour risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Daily smoking	1.40*	1.68*	1.16
Physical inactivity	0.93	0.90	1.04
Obesity	1.41*	1.36	1.62*
Heavy drinking	1.95*	1.95*	2.67

* significantly different from those who do not have a given health behaviour at the 0.05 level (e.g., obese versus non-obese people)
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

In addition, men who smoked daily had a significantly higher risk of early exit from the labour force. Daily smokers were 1.7 times more likely than others to retire early. Previous research has also found a relationship between the number of cigarettes smoked daily and early retirement rates (Rothenbacher et al. 1998). The risk of early retirement was greatest among workers smoking 30 or more cigarettes per day. However, the true impact of smoking behaviour may be underestimated due to a healthy smoker effect (Husemoen et al. 2004). Some smokers may exit the labour market (due to death or disability) quite early in their life course, therefore only smokers who were healthy enough to stay employed at the start of the study period were included for analysis.

Smoking and obesity tend to have an impact on early retirement by affecting health status. When health status was controlled for in an additional regression model, the effects of these two conditions disappeared. Even after controlling for self-perceived health, heavy drinking still had a significant effect on early exits from the labour market. Therefore, heavy drinking seems to have a direct effect on early retirement.

Work stress factors and early retirement

Various indicators of work stress were included to examine the effect of job quality or workplace well-being on early retirement from the labour force. The indicators include job strain, job dissatisfaction, social support at the workplace (from co-workers and supervisors), physical demands, and job insecurity.

Job strain significantly increased the likelihood of early exit for women. Women with high-strain jobs were almost twice as likely as their colleagues with low-strain jobs to exit the labour force early (Table 4). Job strain is determined by the interactions between the level of psychological demand (how mentally demanding a job is) and that of decision latitude (how much control workers have in their jobs). When older workers feel that the psychological demands of their jobs are too high, and/or the job control is too limited, the risk of early retirement tends to increase. These findings are consistent with previous research which shows that early retirement is related to environmental factors at the workplace and that women are more affected than men (Christiansen and Nielsen 2009).

Table 4 Adjusted[1] work stress risk ratios for not working due to retirement or disability

	Both sexes	Men	Women
		ratio	
Job strain			
High	1.78*	1.52	1.81*
Medium	1.08	1.02	1.04
Low (ref.)	1.00	1.00	1.00
Job dissatisfaction	1.62*	1.52	1.60
Low co-worker support	1.02	0.93	1.01
Low supervisor support	1.58*	1.80*	1.40
Physical demands	1.27	1.53*	0.97
Job insecurity	1.15	1.55	0.80

* significantly different from reference group (ref.) at the 0.05 level
1. Adjusted for age, place of residence, marital status, household income adequacy, class of employment, highest level of schooling, and occupation.
Note: To address possible colinearity problem, each indicator of work stress was analyzed in a separate model.
Source: Statistics Canada, National Population Health Survey, 1994/1995 to 2006/2007.

The effects of job strain were similar but not statistically significant for men's retirement.[8] For male workers, however, supervisors' support at the workplace seemed to be an important factor in avoiding early retirement. Men who felt that they had low support from their supervisors had almost twice the risk of retiring early compared with those who had support. As Lin and Hsieh (2001) indicate, the perception of positive evaluations from bosses or supervisors can moderate the relationship between job stress and withdrawal behaviours of employees.

Not surprisingly, job dissatisfaction is related to early retirement. A decrease in overall job satisfaction is found to be one of the most important factors affecting the increase in intentions to retire (Sibbald et al. 2003). In this analysis, dissatisfied workers were 62% more likely than satisfied workers to stop working early, before age 65.

For men, having a physically demanding job increased the risk of retirement by 53%. Previous research has linked conditions of physical work strain with the decision to retire. These conditions include repetitive or continuous strain, musculoskeletal strain, and uncomfortable working positions such as crouching, bending, twisting or being fixed (Lund and Villadsen 2005).

These findings show a close association between one's job quality and the likelihood of early departure from the workforce. Both psychosocial and physical aspects of job quality affect early labour force exits.

Although not presented in the tables, the effects of various socio-economic variables on retirement were consistent with previous studies (Turcotte and Schellenberg 2005). For example, the likelihood of retirement was higher for workers who were older at the start of the period. Compared with paid employees, the self-employed were less likely to retire early. As well, workers in Quebec were more likely to stop working early than those in Ontario. Compared with managers and professionals, blue-collar women tend to exit the labour force early.

Conclusion

With an aging population, older workers are becoming an increasingly larger part of the labour force. Policy makers and employers are becoming more focused on the retention of older workers. And for older workers themselves, control over the timing and circumstances of their retirement is critical to their economic well-being.

This article examined specific associations between various health factors and early departure from the labour market. It made use of the National Population Health Survey, which followed individual respondents for 12 years. Although the sample size for the population of interest was quite small, the richness of the data related to a range of health indicators and workplace factors yielded a number of significant results.

It was found that subjective and objective measures of health status were related to the early exit of men from the labour market. Some health behaviour factors also affect the decision to retire early (obesity for women, and heavy drinking and daily smoking for men). As well, the quality of working conditions was found to have significant effects on retirement behaviour. For instance, high psychological demands and low job control tend to shorten women's careers whereas low support from a supervisor was associated with men's early retirement.

The findings of this study imply that health-related habits of individual workers may affect their retirement decisions and, thus, have financial implications. Therefore, public health policies and programs can potentially play a role in the labour force participation and personal finances of older workers. As well, workplace health programs should be of interest to employers with an aging workforce. Providing a safe, healthy and stimulating work environment seems to minimize early involuntary departures.

Notes

1. A slight increase has been observed in the past decade.
2. Those with pension coverage are about 10 percentage points more likely to be certain about their planned age of retirement than those with no pension coverage, and pension plan members expect to retire about 13 months earlier than non-members (Schellenberg and Ostrovsky 2008).
3. The Canadian Community Health Survey (CCHS) – Healthy Aging, cycle 4.2, may help fill this data gap. This upcoming cycle includes extensive questions on retirement as well as detailed health information.
4. As expected, the proportion of those who indicated retirement as the main reason for exit from the labour force increased over the cycles. In 2006/2007, it accounted for 72% of all exits compared with only 19% in 1996/1997.
5. Only 9% of those who exited the labour market in this analysis were younger than 50 when they left the labour force, 67% were in their 50s, 17% between 60 and 62, and 6% between 63 and 64 (data not shown).
6. The number of chronic conditions was calculated based on respondents' answers to questions about whether they had been diagnosed by professionals as having any of 15 chronic conditions (i.e., asthma, arthritis, high blood pressure, back problems, migraines, epilepsy, bronchitis, diabetes, stroke, heart disease, cancer, ulcers, urinary incontinence, Alzheimer's disease, and eye problems [cataracts and glaucoma]).
7. As the NPHS is not a survey on retirement, respondents' answers on self-perceived health may not be affected by their retirement status as much as it would have been in a survey focused on retirement.
8. The small sample size likely contributed to a test statistic just above the threshold ($p=0.07$ versus 0.05).

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